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Do very small adipocytes in subcutaneous adipose tissue (a proposed risk factor for insulin insensitivity) have a fetal origin?

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SUMMARY

Background & aims: Previous studies have shown that fetal life malnutrition affects preferences for fat deposition in the body thereby predisposing for visceral adipocity and associated disorders in glucose-insulin regulation. In this study, we aimed to test the hypotheses that late-gestation undernutrition 1) has long-term differential impacts on development, expandability and metabolic features in subcutaneous as compared to perirenal and mesenteric adipose tissues, which 2) will predispose for visceral obesity upon exposure to an obesogenic diet in early postnatal life.
Methods: Twin-bearing last trimester ewes received diets supplying 100% (NORM) or 50% (LOW) of protein and energy requirements. Lambs received moderate, low-fat (CONV) or high-carbohydrate-high-fat (HCHF) diets from 3-days until 6-months of age (just after puberty), and then half the lambs (including all males) were sacrificed. Remaining animals (exclusively females) received a low-fat, grass-based diet until sacrificed at 2-years of age (adulthood). In subcutaneous, perirenal and mesenteric fat, energy metabolism related gene expressions and fatty acid composition were

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